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FISH & RICHARDSON P.C.

FISH RICHARDSON & NEAVE
BOSTON
(1916-1969)

FREDERICK P. FISH
(1855-1930)

W.K. RICHARDSON
(1859-1951)

601 THIRTEENTH STREET, N.W.
WASHINGTON, D.C. 20005

TELEPHONE: 202/783-5070
FAX: 202/783-2331

BOSTON
617/542-5070

HOUSTON
713/629-5070

SILICON VALLEY
415/322-5070

TWIN CITIES
612/335-5070

SOUTHERN CALIFORNIA
619/678-5070

NEW YORK
212/765-5070

December 31, 1996

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

BY HAND DELIVERY

Richard M. Smith, Chief
Office of Engineering and Technology
Federal Communications Commission
2000 M Street, N.W., Room 480
Washington, D.C. 20554

Re: Request for Limited Waiver of Part 18 Rules
Supplemental Comments of Fusion Lighting

Dear Dick:

This is to follow-up our meeting on May 20, 1996 and my letter to you of May 31, 1996, requesting, on behalf of Fusion Lighting, Inc., a limited waiver of the Part 18 conducted emission limits for a novel RF lighting device.

You will recall that during our meeting, we discussed the fact that microwave ovens, operating in the same frequency band (2.45 GHz) and using the same power source (i.e., a magnetron) as the Fusion lamp are not required to meet any conducted emission limits yet, the Fusion lamp, because it is defined as a "lighting device" is subject to stringent limits that necessitate the use of expensive power line filtering. Apart from the inexplicable lack of "regulatory parity" for these very similar ISM devices, we also pointed out the serious safety and economic issues presented by such filtering requirements. While there is no need to restate those discussions in detail here, we simply note again that there have been no reported cases of interference from the 120+ million microwave ovens currently on the U.S. market for which no power line filtering is required.

In an effort to clarify the issues raised, however, you asked the Commission's laboratory staff to collect data on conducted emissions from domestic microwave ovens. Subsequently, Tom Phillips performed measurements on several sample ovens as well as on Fusion's early prototype lighting device. Mr. Phillips' testing revealed that the highest emission among three ovens tested was 13.5 dB above the non-consumer Part 18 limits (at 1.6 MHz) whereas the Fusion lamp, without line filtering, was measured at approximately 40 dB above the limits (at 479 kHz).

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Around the same time, Fusion performed its own testing on several commercially available microwave ovens and observed emissions levels similar to those observed by Mr. Phillips. The test results obtained by Fusion and Mr. Phillips are graphically illustrated in Exhibit 1, attached hereto. Although the data shows clearly that none of the domestic ovens sampled are capable of meeting the Part 18 conducted limits applicable to lighting devices, there is no information on the emissions from commercial microwave ovens which, due to much higher power, produce even higher conducted emissions levels.

Following our meeting, Fusion also solicited data from Magnetek, one of the leading power supply manufacturers in the U.S., on the cost of designing and developing a custom power line filter to bring its lighting devices within the Part 18 limits.[1/] The overall price impact to the end user of such custom filtering is set forth in Exhibit 2.

As the data reveals, the commercial lighting market is split approximately evenly between 208 volt and 277 volt users. To be competitive with conventional lighting sources, the Fusion lamp must be priced in the $200 range. Fusion's analysis demonstrates, however, that a custom line filter for its device will add between 13.5% (208 volt) and 17.3% (277 volt) to the end user's cost -- due solely to the Part 18 requirements -- and will severely undercut Fusion's competitiveness in the commercial and industrial lighting markets (Love Affidavit at ¶ 4).[2/]

Fusion has been cognizant of the Commission's stated concern about the inherent risk associated with an unlimited waiver of the Part 18 conducted emission limits. For this reason, Fusion performed further analyses of its lighting devices in an effort to arrive at a set of emission limits with which it

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[1/] As explained in detail in our May 31, 1996 letter, there are no commercially available line filters capable of meeting both FCC and UL limits. Accordingly, if Fusion's waiver is not granted, it will be required to use a custom designed filter for its lighting devices.

[2/] Fusion has discovered that the energy savings, environmental benefits and cleaner spectrum output from its lamps are not enough to offset, in the typical customer's analysis, the "upfront" lower cost of conventional lighting sources. Even when cash flow projections show the obvious savings over time, most customers still make their lighting procurement decision based on the purchase price. Thus, to be competitive Fusion lamps must be price competitive with conventional lighting.

could comply without the need for custom line filters. As the graph in Exhibit 3 illustrates, Fusion is now proposing a limited waiver of the Part 18 rules, as follows:

- 100 dBμV below 450 KHz (currently, there are no limits for lighting devices below 450 KHz);
- 95 dBμV between 450 KHz and 5 MHz; and
- 95 dBμV decreasing linearly to 70 dBμV, above 5 MHz.

Fusion believes this proposal strikes a fair balance between its competitive requirements and the Commission's regulatory objectives. Fusion presented this proposal to the Interdepartment Radio Advisory Council (IRAC) of NTIA during a meeting on September 11, 1996. No objections were voiced by any of the participants to these limits and the participants urged Fusion to submit this data to the Commission.

Accordingly, Fusion respectfully requests that the Commission give prompt consideration to its proposal set forth herein for a limited waiver of the Part 18 conducted emission limits for its ISM lighting devices. Because Fusion will soon be ramping up production of its commercial lamps, the Commission is asked to grant this request as quickly as possible.

We look forward to your prompt consideration of this matter.

Very truly yours,

Terry G. Mahn

TGM/bab
Enclosures
cc: Wayne Love, Fusion Lighting Inc.
William Gamble, Chairman, IRAC
Bruce A. Franca, Deputy Chief Engineer
Julius Knapp, Chief, Equipment Authorization Division
L. Art Wall, Chief, Consumer Service Branch
John A. Reed, Technical Rules Branch
Jerry L. Ulcek, Electronics Engineer
68320.W11

EXHIBIT 1

MICROWAVE OVEN EMISSIONS

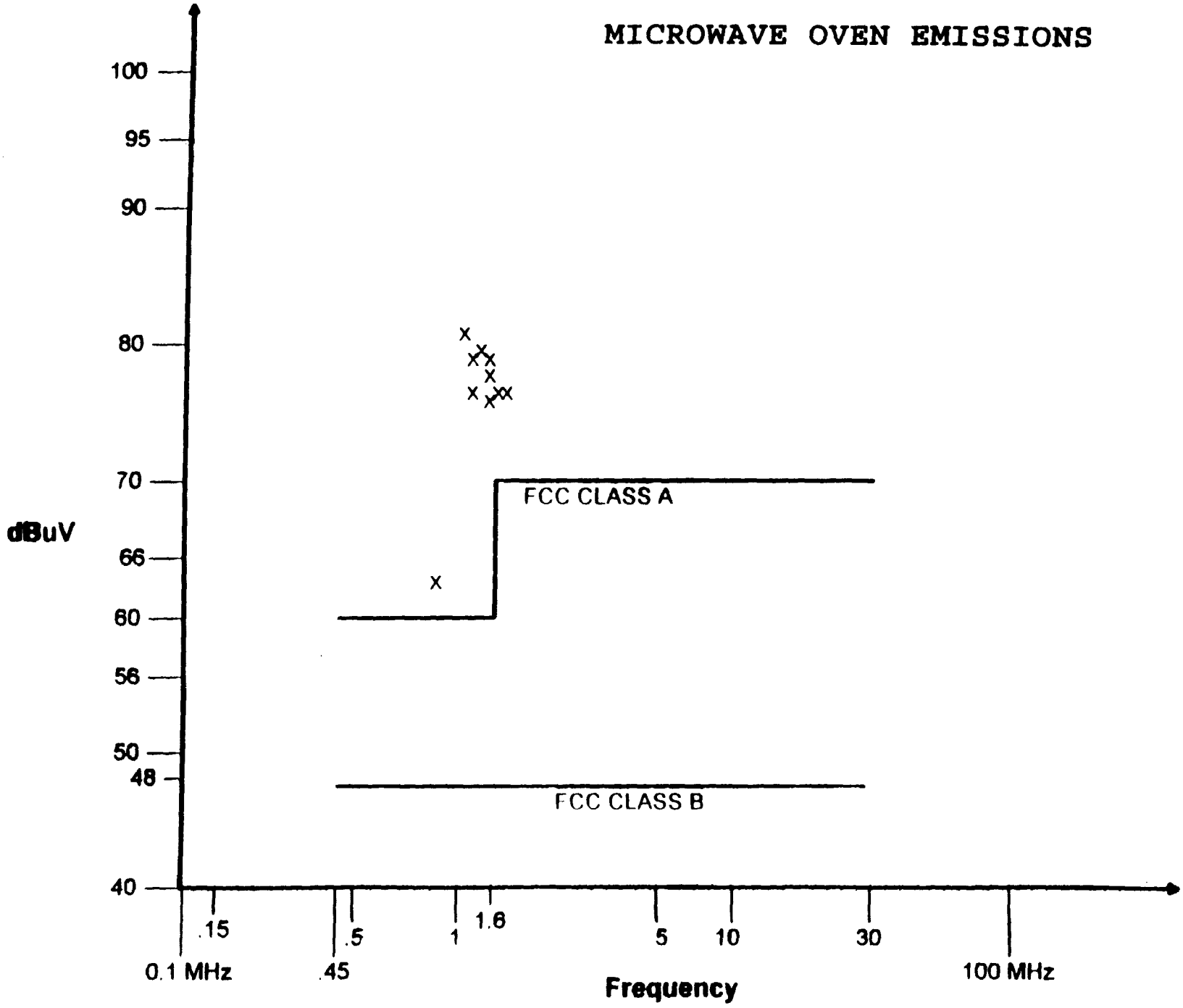


EXHIBIT 2

PRICE IMPACT OF AN INPUT LINE FILTER
ON THE FUSION SOLAR 1000™ POWER SUPPLY

The sales price of a Solar 1000™ lamp system to be competitive with other light sources:

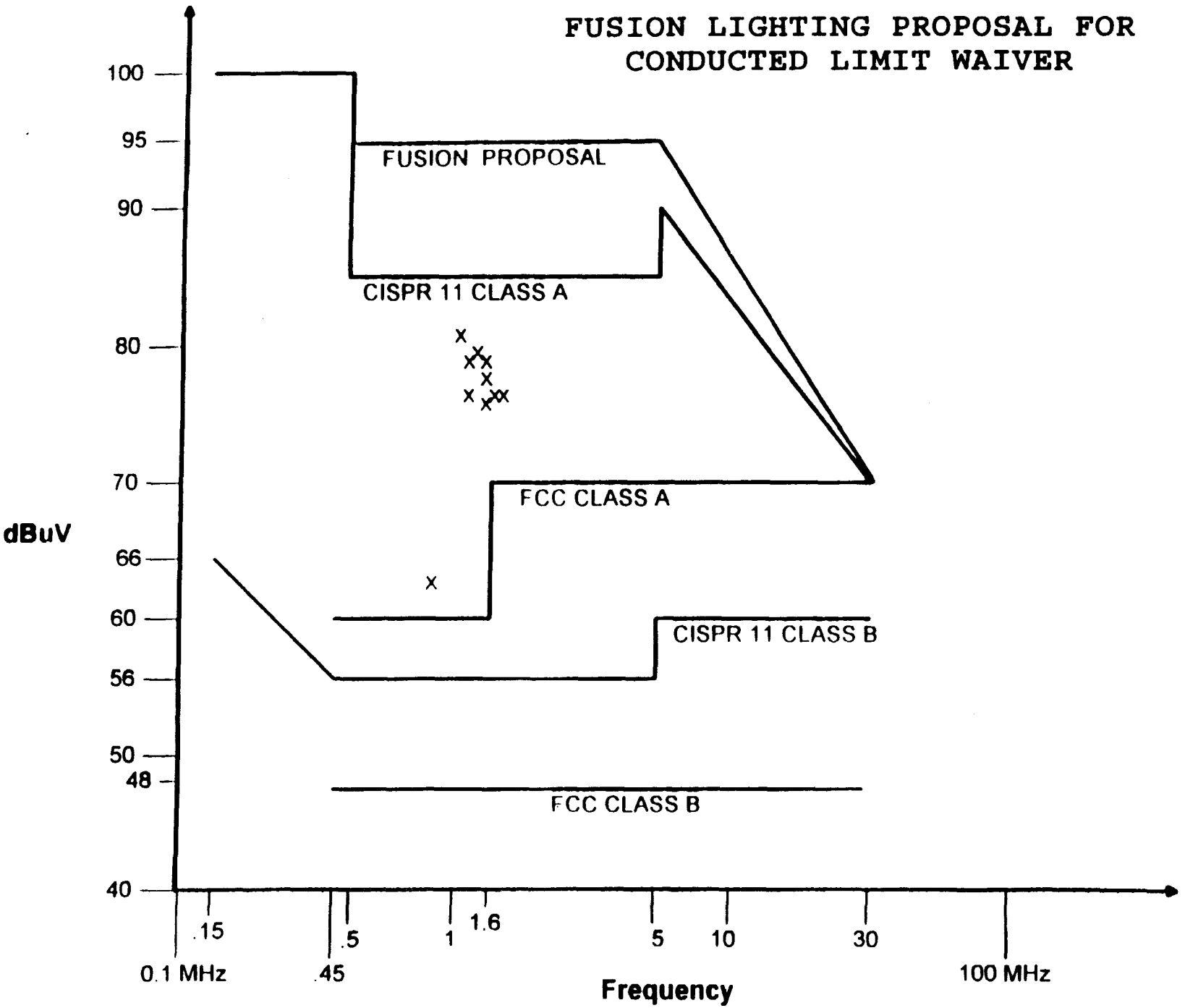
Between $150 and $250 **Use $200 as an average**

Cost from vendor	250 Volt version*	277 Volt version*
Material cost	$ 7.00	$10.25
Labor cost	$ 3.25	$ 3.25
Mark-up	$ 3.59	$ 4.05
Sales price to Fusion Lighting	$13.84	$17.55
Sales price to fixture OEM	$19.37	$24.57
Sales Price to end user	$27.13	$34.40
Percent of total system price	13.5%	17.2%

* The lighting market is split about 50/50 at 208 volts and 277 volts.

EXHIBIT 3

FUSION LIGHTING PROPOSAL FOR CONDUCTED LIMIT WAIVER



BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

Request for Limited Waiver	)
of Part 18 Rules	)

DECLARATION OF WAYNE LOVE

Wayne Love, hereby declares and states as follows:

1. I am a Senior Engineer with Fusion Lighting, Inc., 7524 Standish Place, Rockville, Maryland 20855. In this capacity, I exercise various technical and regulatory responsibilities for the implementation of the Fusion Solar 1000 and other ISM-band lighting products under development at Fusion.

2. I have personal knowledge of the facts set forth in the accompanying letter to Richard M. Smith and am competent to attest thereto.

3. Exhibits 1 and 2 were prepared at my direction. Exhibit 3 was prepared by me based on information provided by Magnetek and Fusion marketing personnel.

4. It has been Fusion's experience, based on substantial input from commercial lighting users, that purchasing decisions are driven primarily by the actual cost of the lighting devices and that long term energy savings, collateral environmental benefits and lighting quality are often times insufficient to offset the higher upfront cost of new or superior

lighting products. For this reason, the added cost of 13.5% (200 volt) or 17.3% (271 volt) for a custom power line filter will severely undercut Fusion's competitiveness in the commercial and industrial lighting markets.

5. To the best of my information and belief, the facts stated in these Exhibits and in accompanying materials are true and correct.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on Dec. 31, 1996.

Wayne Love

Wayne Love